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VARIORUM.

Utilization of Tinman's Waste.

In the scraps of the tinshops, often thrown away by hundreds of tons by the tinmen of one single city, we posses two valuable metals, iron and tin. Attempts have been lately made for separating these metals by melting, but the process has been as yet without success. What physical action, however, could not do, chemical affinity will surely complete. We say this in regard to a process by which the sheet tin may be freed from its coating without being subjected to heat. The process is by first treating the scraps with a solution of caustic lye, thereby obtaining as a product a valuable color-base (stannate of soda, resp. potassa), which of late has come into extensive use among dyers. As both the iron scraps and the tin solution serve useful purposes in the arts, we trust that many of our readers will be interested and instructed if we devote some space to the above subject.

Preparation of Stannate of Soda. — For fastening and brightening dyes especially Turkey red from madder, stannate of soda is unsurpassed by any mordant; it is furthermore not poisonous, as is the double salt of arseniate and stannate of soda, a base hitherto employed to some extent for fixing fabrics. For its preparation the tin scraps are rolled up spirally and put in a wooden tub with 10 per cent. of sulphur, and 5 per cent. of solid caustic soda (in manufacturing the resp. potassa salt, take 7 lbs. of the latter), enough water being added to cover them. Then steam is turned on and the same allowed to pass into the liquid, until the scraps are free of tin, when the alkaline liquor is drawn off by a faucet and left to evaporate in an iron kettle until crystallization takes place. From the crystals which simply constitute glauber salt, the mother lye is separated, evaporated to dryness in another vessel, leached out by water and filtered. The product thus obtained is left to crystallize, thus forming the stannate of soda; 100 lbs. of scraps yield 12 to 15 lbs. of the latter.

Preparation of a New (Tin) Green. — This paint which we propose to call »Phenician green«, because its base, the tin, was first obtained by the ancient Phenicians is not poisonous like Paris and other greens; it does not bleach; may be used as lime and water color and deepens in oil. It is prepared by adding a solution of stannate of soda, made of 15 parts of the dry substance to one consisting of 12 parts of blue copperas. The precipitate obtained is collected and washed out; by adding chrome yellow or a decoction of fustic a blue shade may be imparted to it.

Preparation of Mosaic gold. — Bisulpharet of tin forms gold-colored translucent scales, of a peculiar soapy feeling. It is largely employed in bronzing wood. The following is a description of its mode of preparation from tin scraps. Put the scraps in glazed pots, cover them with muriatic acid, and when the tin is all taken up, transfer the liquid into another vessel. Should it yet contain free acid, add new scraps. Then immerse copper plates into the liquid; the tin will thus by galvanic action precipitate upon them as a spongy mass. Collect the tin, wash it with water, dry it and mix it intimately with equal parts of sulphur and salammoniac, fill the mixture into glass retorts and heat them up gradually on a sand-blast. The bronze is obtained partly as a sublimate, partly at the bottom of the retort.

For the Manufacture of Copperas. — This process is too well known to be described.

Preparation of a New Polishing for Optical Glasses. — This is obtained by precipitating a copperas solution by oxalic acid, and drying and heating the precipitate.

Preparation of „Iron Green". — First prepare Prussian blue by mixing a solution of copperas with one of yellow prussiate of potassa, dissolve the same in oxalic acid, and add to the resulting blue liquid a solution of bichromate of potassa and a small quantity of sugar of lead. Collect the green precipitate, wash it out and dry it. Any intermediate shade may be obtained, from the deepest blue to the brightest green, by varying the proportions of the three solutions. In closing, we will mention that zinc and cadmium are thrown down in a dentistri from a solution of binoxide of tin in potassa. (Scientific American.)

Machinery for the Manufacture of Wood-pulp for Paper making.

Many very interesting samples of paper manufactured from wood have been shown at the Paris Exhibition. The invention is not new, but the processes by which the fibres are treated, the method of whitening the material and converting it into a pulp for the manufacture of excellent paper, have only now been successful. The machinery is driven by three portable engines, of the united power of 50 horses. It consists principally of the »defibrer« or grindstone, by which the wood is reduced into fibre, whilst water is continually running over it. The wood is held firmly, and pressed against the stone by a self-acting mechanism, and ground into a mass of fibre. It then passes through a coarse sorting apparatus, in which the splinters of wood are removed. This apparatus separates at the same time the coarse part of the fibre, and conducts it to the refiner, and it also serves for the mixing of the coarser pulp. The refiner consists of a pair of millstones, between which the pulp is ground; it then passes to a sorting apparatus, consisting of a series of cylinders, covered with wire gauze. The different qualities of pulp are sorted according to the degree of fineness, and delivered into tanks. Eighty of these machines have already been constructed, and supplied to various parts of Europe, and the factories in operation in France and elsewhere are preparing daily from 1,000 to 2,000, and in some instances, 10,000 kilogrammes of pulp per day from wood, for the production of white paper. Hitherto there has been great difficulty in producing paper from woody substances, on account of it not receiving ink and pressure without deterioration.

Enamel on Iron.

Years ago thoughtful ornamentists might have been struck by the application of enamel to our most common culinary utensils, stewpans, pots, kettles, indeed every article formed of iron and intended for cooking. This manufacture has, as might have been expected, resulted in the production of plates and panels with surfaces sufficiently fine for the reception of paintings as minute in finish as the rare works of the most eminent French enamellists. The difficulty of enamelling on metal is occasioned by the unequal expansion of the metal basis and the enamel surface; but this constant source of danger, very frequently of utter ruin to valuable paintings, has been obviated by Mr. Bough, the inventor of the process, whose enamel expands and contracts equally with the iron plate on which it is laid; and thus the process admits of the preparation of panels of any size. But the value of the invention is its cheapness and adaptability to the enrichment of an almost endless catalogue of domestic utilities, as finger-plates, door-handles, name-plates, ornamental panels of every kind, etc. In all ordinary cases the design is printed on the plate, then colored by hand, and afterwards submitted, as usual, to the furnace. But in the production of large plates we see a new era opening in enamel ornamentation. (The Art-Journal.)
